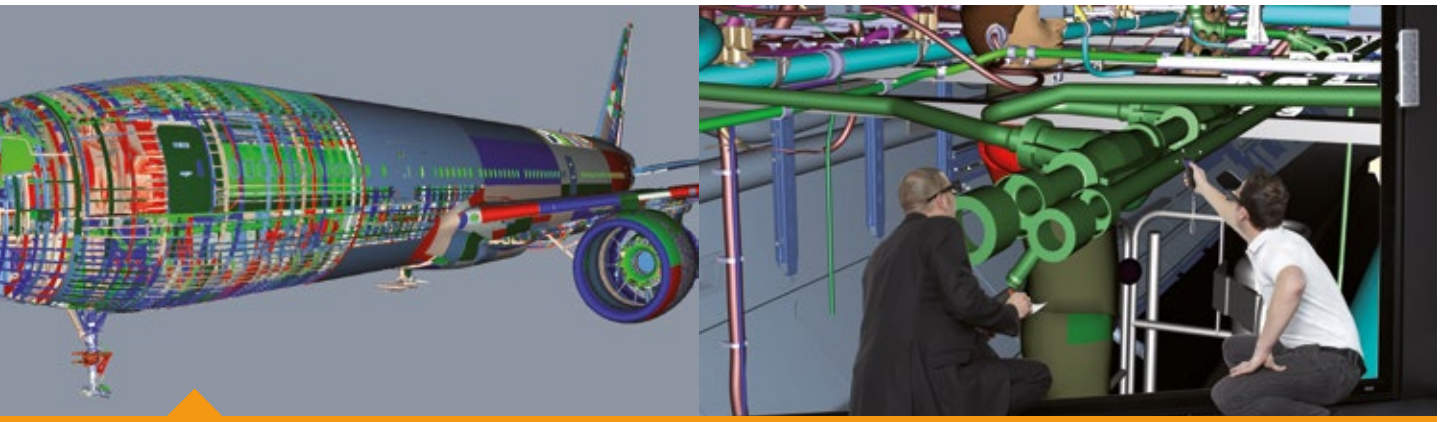
esi
get it right®

virtual reality

IC.IDO

3D Immersive Product Experience for Aeronautics & Aerospace Industries

Make the right decisions, at the right time, and execute cost-effectively with IC.IDO



IC.IDO: THE PIONEER AND WORLDWIDE LEADER OF INDUSTRIAL IMMERSIVE VIRTUAL REALITY SOLUTIONS

End-to-End Virtual Prototyping

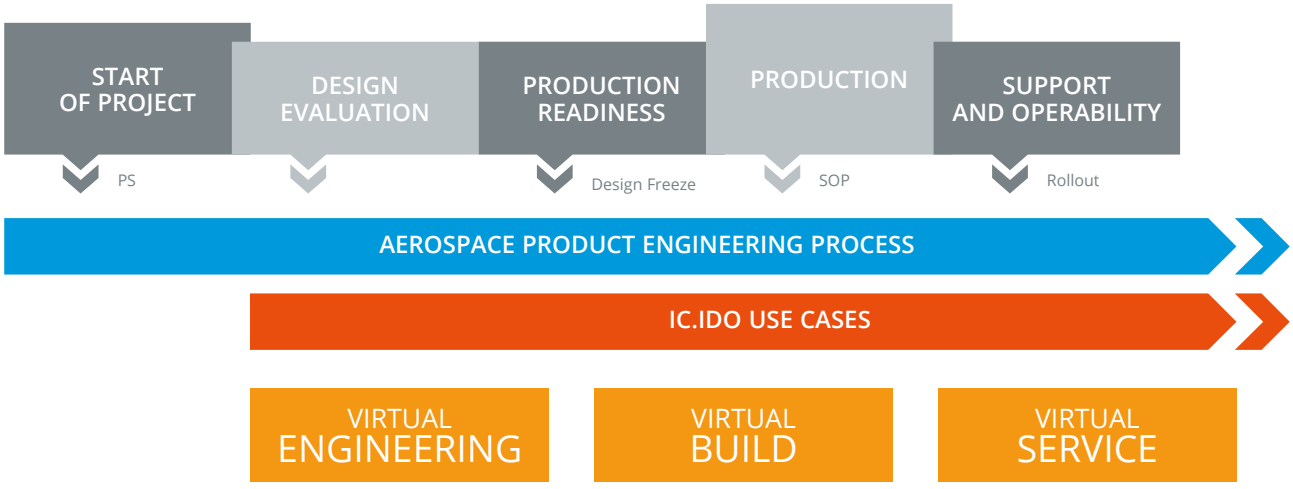
ESI boasts a unique know-how in Virtual Product Engineering, based on an integrated suite of coherent, industry-oriented applications, including Virtual Reality Solution, IC.IDO.
IC.IDO is undoubtably an asset to any company who wishes to eliminate the use of physical prototypes. IC.IDO's reliable and proven real-time physics simulation assures realistic behavior of virtual objects. With it's best-in-class immersive user interface, you are able to fully engage with your virtual product just as you would with a physical prototype.
IC.IDO improves design for manufacturability and maintainability of new products, showing, generating significant savings over the lifetime of a program.

The key factors for IC.IDO's market success

FAST TURNAROUND RESULTS - from data acquisition, and preparation to analysis
FIDELITY - understand the dynamic behavior through real-time physics (contact and obstruction, behavior of flexibles, etc.)
REAL-TIME DECISION MAKING - consider all options with your team and then conclude
PERFORMANCE - large and complex data sets in real-time
USABILITY - made for the engineer

Major aerospace companies such as **Airbus, AVIC, Boeing, Lockheed Martin,** and their suppliers, use IC.IDO to:
- Perform intuitive product experience early in the process
- Reduce turnaround time by enabling design for serviceability
- Optimize assembly / disassembly sequences
- Verify resources and tooling, support documentation and visualize workflow

IC.IDO in Aerospace Industry



Actively engage with your Virtual Prototype in a truly realistic way. Allow process engineering to work from the earliest stages of product design on robust concepts.

VIRTUAL ENGINEERING

Massive data visualization

Accessibility, Reachability, Visibility, Worker simulation

Instant evaluation of flexible components, such as pipes and cables

Data review

- Perform early, multi-domain, product validation for collaborative problem identification and resolution
- Generate cost savings by providing a holistic virtual prototype as a high-grade substitute for physical prototypes
- Increase product quality and maturity through joint product and problem understanding

Product feasibility

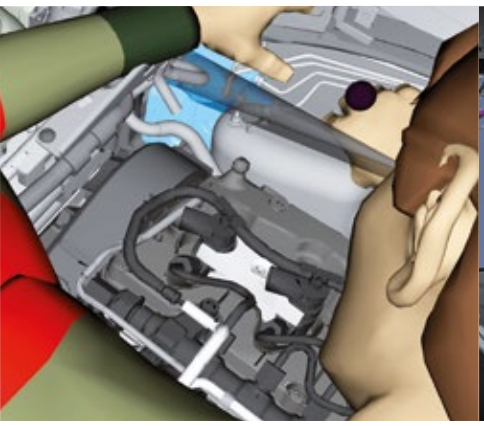
- Frontload engineering activities; accelerate time-to-market and ensure on-time delivery
- Increase product maturity and decrease rework costs through early proof of feasibility and operability
- Enable early error identification and efficient decision making, massively reducing rework cost
- Reduce process validation times through interactive simulation of parts and mechanisms, with the ability to perform ad-hoc changes during a meeting

Operability and functionality

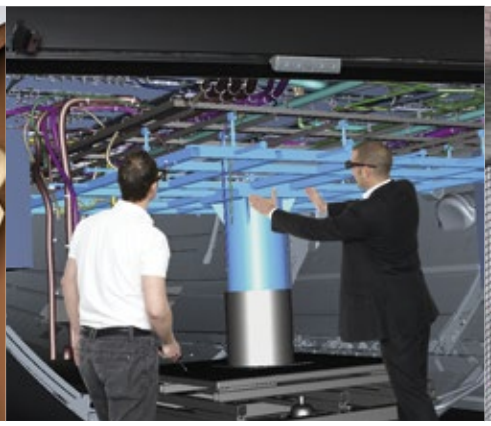
- Confirm compliance with minimum clearances and accessibility specifications during product usage and operation
- Reduce injuries and unnecessary discomfort
- Guarantee and increase customers' perceived product quality

IC.IDO in Aerospace Industry

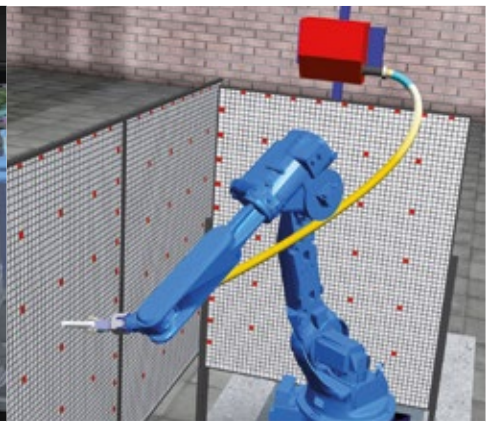
Detect and avoid assembly issues by virtual validation of assembly processes long before physical mockups are available



Reachability / Visibility / Worker simulation



Pre-Assembly simulation / Worker training

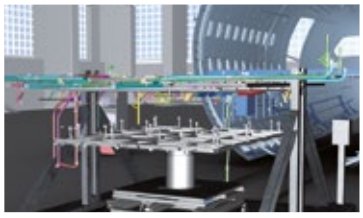


Cell layout/ Robotic analysis / Flexible parts

VIRTUAL BUILD

Control of workers' safety during operations

Manipulators/ Ergonomic issues / Operation definition and validation



Assembly sequence simulation / Kinematic validation

Assembly cell ergonomics, blind operation identification and hand clearance review and validation

- Create better quality and throughput by improving workplace and process ergonomics
- Reduce unnecessary travel paths
- Efficiently deliver materials and tools to line and worker
- Reduce injuries and unnecessary discomfort
- Confirm compliance with ergonomically relevant installation guidelines
- Improve quality through more robust assembly procedures

Tooling access review/ validation/ training

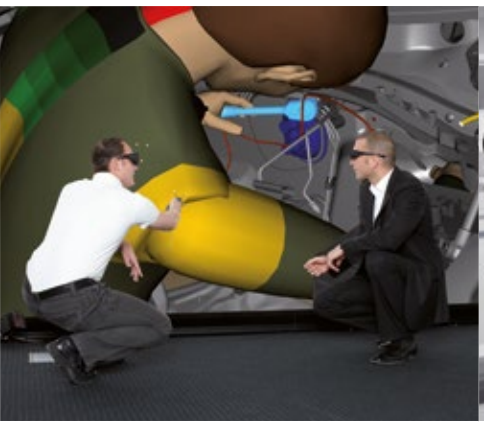
- Accelerate time to production by verifying adequacy of tooling before ramp up
- Reduce the need for tooling rework and decrease development costs for special tools
- Avoid excessive downtime due to inadequate tooling/handling devices
- Improve throughput and cycle time with improved tooling ergonomics
- Accelerate time to production by fully training staff, virtually, in advance

Virtual prototype part review

- Accelerate time to market with lower costs for physical prototype as necessary familiarization can be conducted virtually
- Frontload activities which impact the manufacturing/assembly design prior to the design freeze

IC.IDO in Aerospace Industry

Generate tangible savings on warranty and maintenance costs by virtual validation of assembly and disassembly procedures at the earliest stage

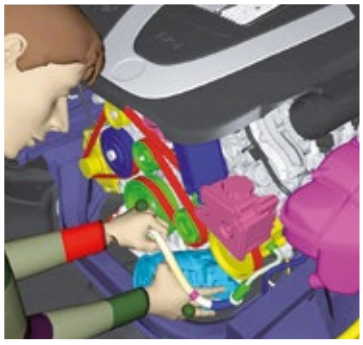


Ergonomic issues / Operation definition and validation

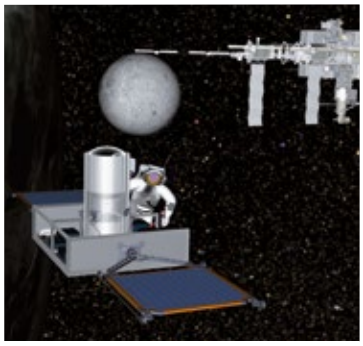
Virtual training of staff

Manipulators / Kinematic validation

VIRTUAL SERVICE



IC.IDO enables instant evaluation of flexible components, such as tubes and cables



IC.IDO allows anticipation of workers' safety during maintenance operations, to decrease the risk of accidents

Tooling access review/ validation/ training

- Maximize the use of standard tools and reduce tooling rework to decrease the costs of special service and maintenance tools development
- Optimize service and maintenance time due to validated tooling/handling devices
- Increase throughput and cycle time due to improved tooling ergonomics
- Provide interactive work instructions to deliver enriched information to the service teams, thereby reducing training costs and elevating the overall quality of maintenance
- Ensure worker safety through workflow validation and preventive familiarization

Feasibility of maintenance, repair and overhaul operations

- Validate maintenance feasibility and costs during early development stages
- Speedup product maturity and decrease rework costs with early proof of feasibility or problem identification
- Reduce planning times and increase planning reliability through virtual review and validation of clearance issues and tool operation
- Establish improved workflows and better understanding – 3D lifelike experience adds a new dimension of technical communication
- Leverage full view of maintenance requirements to improve design-for-maintainability
- Maintain the product correctly in the first instance by designing and validating multi-disciplinary data

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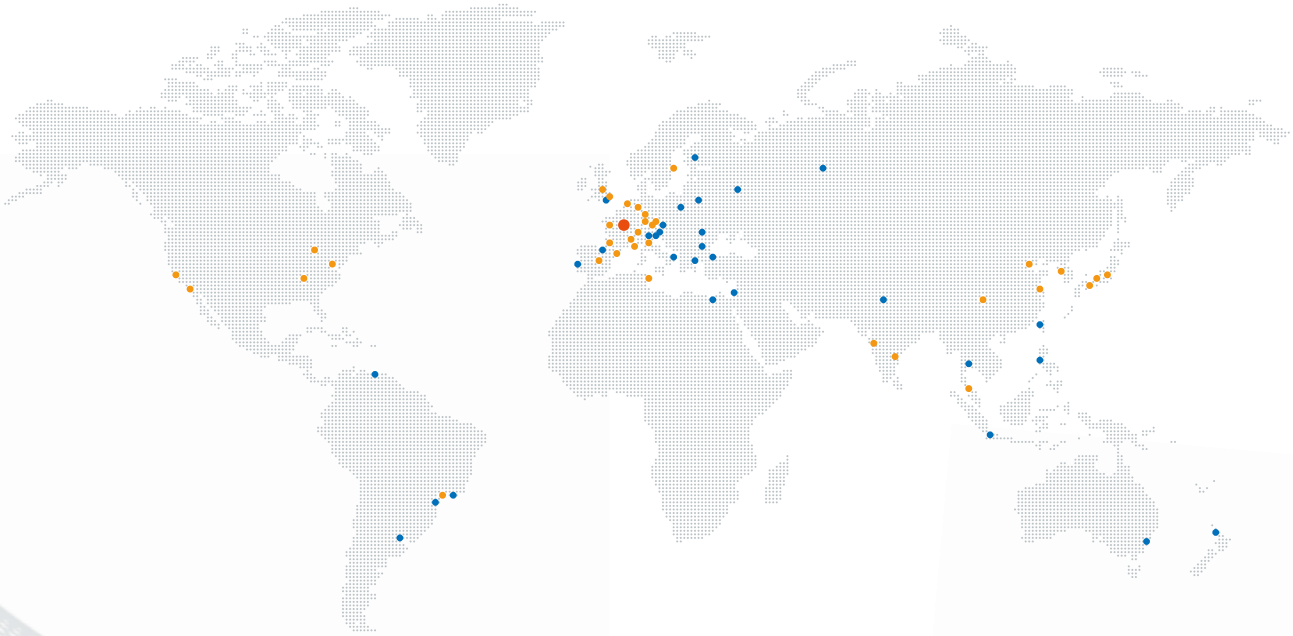

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ABOUT ESI GROUP

ESI is a pioneer and world-leading provider in Virtual Prototyping that takes into account the physics of materials. ESI boasts a unique know-how in Virtual Product Engineering, based on an integrated suite of coherent, industry-oriented applications. Addressing manufacturing industries, Virtual Product Engineering aims to replace physical prototypes by realistically simulating a product's behavior during testing, to fine-tune fabrication and assembly processes in accordance with desired product performance, and to evaluate the impact on product use under normal or accidental conditions. ESI's solutions fit into a single collaborative and open environment for End-to-End Virtual Prototyping. These solutions are delivered using the latest technologies, including immersive Virtual Reality, to bring products to life in 3D; helping customers make the right decisions throughout product development. The company employs about 1000 high-level specialists worldwide covering more than 40 countries. ESI Group is a French company listed in compartment C of NYSE Euronext Paris.